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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A. P.O. BOX 2938 MINNEAPOLIS, MN 55402			TOLEDO, FERNANDO L	
			ART UNIT	PAPER NUMBER
			2823	

DATE MAILED: 07/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/602,323

Applicant(s)

AHN ET AL.

Examiner

Fernando L. Toledo

Art Unit

2823

OK

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 1 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 24 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-68 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_\_ is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-68 are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Election/Restrictions*

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
  - I. Claims 1 – 15, drawn to a method of forming a nanolaminate dielectric film, classified in class 427, subclass 1+.
  - II. Claims 16 – 19, drawn to a method of forming a capacitor, classified in class 438, subclass 381.
  - III. Claims 20 – 26, drawn to a method of forming a transistor, classified in class 438, subclass 216.
  - IV. Claims 27 – 33, drawn to a method of forming a memory device, classified in class 438, subclass 266.
  - V. Claims 34 – 41, drawn to a method of forming an electric system, classified in class 427, subclass 1+.
  - VI. Claims 42 – 47, drawn to a dielectric film, classified in class 427, subclass 1+.
  - VII. Claims 48 – 51, drawn to a capacitor, classified in class 257, subclass 1+.
  - VIII. Claims 52 – 57, drawn to a transistor, classified in class 257, subclass 1+.
  - IX. Claims 58 – 62, drawn to a memory device, classified in class 257, subclass 1+.
  - X. Claims 63 – 68, drawn to an electric system, classified in class 427, subclass 1+.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions II and I are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require

Art Unit: 2823

the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because the capacitor of group II requires other steps such as the forming of electrodes. The subcombination has separate utility such as the dielectric layer could be a dielectric layer for a gate, a cap layer or sidewalls.

3. Inventions III and I are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because the transistor of group III requires source and drain formation. The subcombination has separate utility such as a dielectric for a cap layer or sidewalls.

4. Inventions IV and I are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because the memory of group IV requires the forming of transistors, sources and drains and word lines. The subcombination has separate utility such a dielectric for a cap layers or sidewalls.

5. Inventions V and I are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because the electronic system requires a controller. The subcombination has separate utility such as a dielectric for cap layers or sidewalls.
6. Inventions VI and I are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the lanthanide oxide layer of the device can be formed on the side of the hafnium oxide layer.
7. Inventions VII and I are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions are a method of forming a dielectric layer and a capacitor device.
8. Inventions VIII and I are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions a method of forming a dielectric layer and a transistor device.
9. Inventions IX and I are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different

functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions are a method of forming a dielectric layer and a memory device.

10. Inventions X and I are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions are a method of forming a dielectric layer and an electronic system.

11. Inventions III and II are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions are a method of forming a capacitor and a method of forming a transistor.

12. Inventions IV and III are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions are a method of forming a transistor and a method of forming a memory system, the transistor can be a CCD transistor.

13. Inventions V and III are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions are a method of forming a transistor and a method of forming an electronic system.

14. Inventions VI and III are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the

Art Unit: 2823

subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because the dielectric layer can be a capacitor dielectric layer or a cap layer or an interlayer dielectric. The subcombination has separate utility such the method of forming a transistor is limited to the gate dielectric and source and drain.

15. Inventions VII and III are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions are a capacitor device and a method of forming a transistor. The transistor does not require a capacitor device.

16. Inventions VIII and III are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the method can have the lanthanide oxide layer as the sidewalls or cap layer while having the hafnium oxide layer as dielectric. Also other layers could be formed between the lanthanide oxide layer and the hafnium oxide layer.

17. Inventions IX and III are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions are a method of forming a transistor that could be part of a CCD device and a memory device.

Art Unit: 2823

18. Inventions X and III are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions are a method of forming a transistor that could be part of a CCD device and an electronic system.

19. Inventions IV and II are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions are a method of forming a capacitor and a method of forming a memory device.

20. Inventions V and II are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions are a method of forming a capacitor and a method of forming an electronic system.

21. Inventions VI and II are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because the invention of group II is a method for forming a capacitor. The subcombination has separate utility such as a method of forming a cap layer, sidewalls or an interlayer dielectric.



Art Unit: 2823

22. Inventions VII and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the device has an alternating layer of hafnium oxide and lanthanide oxide layers.

23. Inventions VIII and II are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions are a method of forming a capacitor and a transistor device.

24. Inventions IX and II are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions are a method of forming a capacitor and a memory device with bit lines and sources and drains.

25. Inventions X and II are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions are a method of forming a capacitor and an electronic system.

26. Inventions V and IV are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different

Art Unit: 2823

inventions are a method of forming a memory system that requires sources and drains and bit lines and the method of forming an electronic system.

27. Inventions VI and IV are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because the method is a method of making a memory device that requires forming sources and drains and bit lines. The subcombination has separate utility such as the dielectric layer can be an ILD, a gate dielectric, sidewalls or cap layers.

28. Inventions VII and IV are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions are a method of making a memory device and a capacitor device.

29. Inventions VIII and IV are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions are a method of making a memory device and a transistor device.

30. Inventions IX and IV are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the

Art Unit: 2823

memory device can have alternating layer of hafnium oxide and lanthanide oxides while the method only forms one on top of the other.

31. Inventions X and IV are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions are a method of making a memory device and an electronic system.

32. Inventions VI and V are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because the method of making an electronic system requires a controller and a device coupled to the controller. The subcombination has separate utility such as the dielectric layer can be a gate dielectric, an ILD, cap layers or sidewalls.

33. Inventions VII and V are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions are a method of making an electronic system, which can include a resistor or an inductor and a capacitor device.

34. Inventions VIII and V are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different

Art Unit: 2823

inventions are method of making an electronic system, which can include a resistor or an inductor and a transistor device.

35. Inventions IX and V are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions are a method of making an electronic system and a memory device.

36. Inventions X and V are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the lanthanide oxide layer of the device can be formed on the side of the hafnium oxide layer (i.e. the lanthanide oxide could be a cap layer and the hafnium oxide could be a gate dielectric).

37. Inventions VII and VI are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because the capacitor of group VII requires other structures such as the electrodes. The subcombination has separate utility such as the dielectric layer could be a dielectric layer for a gate, a cap layer or sidewalls.

38. Inventions VIII and VI are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require

Art Unit: 2823

the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because the transistor of group VIII requires source and drain. The subcombination has separate utility such as a dielectric for a cap layer or sidewalls.

39. Inventions IX and VI are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because the memory of group IX requires the transistors, sources and drains and word lines. The subcombination has separate utility such a dielectric for a cap layers or sidewalls.

40. Inventions X and VI are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because the electronic system requires a controller. The subcombination has separate utility such as a dielectric for cap layers or sidewalls.

41. Inventions VIII and VII are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation,

Art Unit: 2823

different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions are a capacitor device and a transistor device.

42. Inventions IX and VII are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions are a capacitor device and a memory device with bit lines and sources and drains.

43. Inventions X and VII are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions are a capacitor device and an electronic system.

44. Inventions IX and VIII are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions are a transistor that could be part of a CCD device and a memory device.

45. Inventions X and VIII are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions are a transistor that could be part of a CCD device and an electronic system.

46. Inventions X and IX are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions are a memory device and an electronic system.

47. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.
48. Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group II, restriction for examination purposes as indicated is proper.
49. Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group III, restriction for examination purposes as indicated is proper.
50. Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group IV, restriction for examination purposes as indicated is proper.
51. Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group V, restriction for examination purposes as indicated is proper.
52. Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group VI, restriction for examination purposes as indicated is proper.
53. Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group VII, restriction for examination purposes as indicated is proper.

Art Unit: 2823

54. Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group VIII, restriction for examination purposes as indicated is proper.

55. Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group IX, restriction for examination purposes as indicated is proper.

56. Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group X, restriction for examination purposes as indicated is proper.

57. Because these inventions are distinct for the reasons given above and the search required for Group II is not required for Group III, restriction for examination purposes as indicated is proper.

58. Because these inventions are distinct for the reasons given above and the search required for Group II is not required for Group IV, restriction for examination purposes as indicated is proper.

59. Because these inventions are distinct for the reasons given above and the search required for Group II is not required for Group V, restriction for examination purposes as indicated is proper.

60. Because these inventions are distinct for the reasons given above and the search required for Group II is not required for Group VI, restriction for examination purposes as indicated is proper.



61. Because these inventions are distinct for the reasons given above and the search required for Group II is not required for Group VII, restriction for examination purposes as indicated is proper.
62. Because these inventions are distinct for the reasons given above and the search required for Group II is not required for Group VIII, restriction for examination purposes as indicated is proper.
63. Because these inventions are distinct for the reasons given above and the search required for Group II is not required for Group IX, restriction for examination purposes as indicated is proper.
64. Because these inventions are distinct for the reasons given above and the search required for Group II is not required for Group X, restriction for examination purposes as indicated is proper.
65. Because these inventions are distinct for the reasons given above and the search required for Group III is not required for Group IV, restriction for examination purposes as indicated is proper.
66. Because these inventions are distinct for the reasons given above and the search required for Group III is not required for Group V, restriction for examination purposes as indicated is proper.
67. Because these inventions are distinct for the reasons given above and the search required for Group III is not required for Group VI, restriction for examination purposes as indicated is proper.

Art Unit: 2823

68. Because these inventions are distinct for the reasons given above and the search required for Group III is not required for Group VII, restriction for examination purposes as indicated is proper.

69. Because these inventions are distinct for the reasons given above and the search required for Group III is not required for Group VIII, restriction for examination purposes as indicated is proper.

70. Because these inventions are distinct for the reasons given above and the search required for Group III is not required for Group IX, restriction for examination purposes as indicated is proper.

71. Because these inventions are distinct for the reasons given above and the search required for Group III is not required for Group X, restriction for examination purposes as indicated is proper.

72. Because these inventions are distinct for the reasons given above and the search required for Group IV is not required for Group V, restriction for examination purposes as indicated is proper.

73. Because these inventions are distinct for the reasons given above and the search required for Group IV is not required for Group VI, restriction for examination purposes as indicated is proper.

74. Because these inventions are distinct for the reasons given above and the search required for Group IV is not required for Group VII, restriction for examination purposes as indicated is proper.

Art Unit: 2823

75. Because these inventions are distinct for the reasons given above and the search required for Group IV is not required for Group VIII, restriction for examination purposes as indicated is proper.

76. Because these inventions are distinct for the reasons given above and the search required for Group IV is not required for Group IX, restriction for examination purposes as indicated is proper.

77. Because these inventions are distinct for the reasons given above and the search required for Group IV is not required for Group X, restriction for examination purposes as indicated is proper.

78. Because these inventions are distinct for the reasons given above and the search required for Group V is not required for Group VI, restriction for examination purposes as indicated is proper.

79. Because these inventions are distinct for the reasons given above and the search required for Group V is not required for Group VII, restriction for examination purposes as indicated is proper.

80. Because these inventions are distinct for the reasons given above and the search required for Group V is not required for Group VIII, restriction for examination purposes as indicated is proper.

81. Because these inventions are distinct for the reasons given above and the search required for Group V is not required for Group IX, restriction for examination purposes as indicated is proper.

Art Unit: 2823

82. Because these inventions are distinct for the reasons given above and the search required for Group V is not required for Group X, restriction for examination purposes as indicated is proper.

83. Because these inventions are distinct for the reasons given above and the search required for Group VI is not required for Group VII, restriction for examination purposes as indicated is proper.

84. Because these inventions are distinct for the reasons given above and the search required for Group VI is not required for Group VIII, restriction for examination purposes as indicated is proper.

85. Because these inventions are distinct for the reasons given above and the search required for Group VI is not required for Group IX, restriction for examination purposes as indicated is proper.

86. Because these inventions are distinct for the reasons given above and the search required for Group VI is not required for Group X, restriction for examination purposes as indicated is proper.

87. Because these inventions are distinct for the reasons given above and the search required for Group VII is not required for Group VIII, restriction for examination purposes as indicated is proper.

88. Because these inventions are distinct for the reasons given above and the search required for Group VII is not required for Group IX, restriction for examination purposes as indicated is proper.

Art Unit: 2823

89. Because these inventions are distinct for the reasons given above and the search required for Group VII is not required for Group X, restriction for examination purposes as indicated is proper.

90. Because these inventions are distinct for the reasons given above and the search required for Group VIII is not required for Group IX, restriction for examination purposes as indicated is proper.

91. Because these inventions are distinct for the reasons given above and the search required for Group VIII is not required for Group X, restriction for examination purposes as indicated is proper.

92. Because these inventions are distinct for the reasons given above and the search required for Group IX is not required for Group X, restriction for examination purposes as indicated is proper.

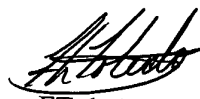
93. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

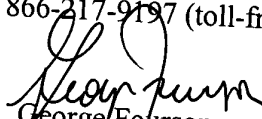
94. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fernando L. Toledo whose telephone number is 571-272-1867. The examiner can normally be reached on Mon-Thu 7am to 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on 571-272-1855. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
FToledo  
21 July 2004

  
George Fourson  
Primary Examiner  
Art Unit 2823